REMARKS

Applicants wish to note that they are responding to the first Office Action dated November 19, 2007. For some unknown reason, the Examiner issued a second Office Action dated December 10, 2007 which is identical to the first Office Action. It is assumed that the second Office Action issued in error and hence, it is respectfully requested that the second Office Action be withdrawn.

A new Abstract has been provided.

In Section 5, the Examiner objects that claims 15-29 are anticipated by International Patent No. WO 01/74111 A1 to Kenneth Guild, et el. In response to this objection, independent claim 15 was amended to include the subject matter of dependent claim 16.

Within Section 5 of the Office Action, the Examiner alleges that the subject matter of each of amended claim 15 (i.e., previous claims 15-16), and claims 17 and 23 is anticipated by Figs. 8-9 of Guild and the associated description, and also page 2, lines 13-19 of Guild. This assertion is respectfully refuted.

It is respectfully submitted that the subject matter of amended independent claim 15, independent claim 17 and independent claim 23 is novel and inventive over Guild.

It is noted that Fig. 8 of Guild relates to one simplified example of the architecture of an optical routing node, while Fig. 9 illustrates a different simplified example of the architecture of an optical routing node (e.g., see page 5, lines 17-20 of Guild). In other words, Fig. 8 relates to one embodiment of a node, and Fig. 9 relates to a further, separate embodiment of a node. Accordingly, in respect of an assertion of anticipation, it is not appropriate to combine the teachings

of the two separate embodiments. For the subject matter of any claim to be anticipated, each of the features must be shown by a single embodiment.

Each of the independent claims of the present application, as amended, includes the limitation that the optical cross-connect comprises a Clos network.

As is well known to the skilled person, a Clos network has three stages – an ingress stage, a middle stage and an egress stage (or, in the terminology used in Guild, page 10, lines 13-17, "primary", "secondary" and "tertiary" switching stages).

It is noted that the embodiment shown in Fig. 9 of Guild only comprises two switching stages (a first optical switch array 501 and a second optical switch array 506, e.g., see page 10, line 31 through page 11, line 5). Thus, the embodiment of the optical cross-connect illustrated in Fig. 9 does *not* include a Clos network, which requires three stages. Accordingly, the embodiment illustrated in Fig. 9 of Guild does not anticipate the subject matter of any of the independent claims of the present application, as amended.

Further, there is no motivation for the skilled person to add an extra stage to the optical cross-connect illustrated in Fig. 9 to form a Clos network. Indeed Guild teaches away from the concept of potentially adding a further switching stage, by suggesting that the second optical switch array 506 within the switch matrix shown in Fig. 9 could be moved (page 11, lines 4-5).

Thus, the subject matter of the independent claims is novel and inventive over the embodiment illustrated in Fig. 9 of Guild.

The subject matter of the independent claims of the present application is also novel and inventive over the embodiment illustrated in Fig. 8 of Guild.

In particular, Guild describes how the optical cross-connect shown in Fig. 8 includes a Clos network 401 consisting of primary (402, 403), secondary (404, 405) and tertiary (406, 407) switching stages used in the *add and drop paths* (408, 409) respectively.

It should be noted that the switch interface unit (SIU410) within the optical cross-connect 400 shown in Fig. 8 does *not* form a stage of the Clos network 401.

Thus the architecture shown in Fig. 8 of Guild has a specific configuration that does not anticipate the subject matter of any of the independent claims of the present application, as amended.

For example, in respect of amended claim 15, the embodiment does not show a single stage optical switching matrix for switching the WDM radiation between the optical inputs and outputs, in which the single stage switching matrix comprises one stage of the Clos network.

Further, in respect of the subject matter of independent claim 17, Fig. 8 does not show an optical cross-connect comprising a first group of optical switching matrices for connecting each through traffic input channel 20 of the through traffic output channels, each through traffic input channel being connected to an input of a switching matrix of the first group, and each through traffic output channel being connected to an output of the switching matrix of the first group, *with that first group of switching matrices forming* (together with the claimed second and third groups) *a Clos network.*

Similarly, in respect of the subject matter of claim 23, Fig. 8 of Guild does not show an optical cross-connect comprising the first group of optical switching matrices for connecting each through traffic input channel with any of the through traffic output channels, each through traffic input channel being connected to an input of a switching matrix of the first group, and each through

traffic output channel being connected to an output of a switching matrix of the first group, *in which that first group of switching matrices forms* (together with the claimed fourth and fifth groups) *a Clos network.*

Further, there would be no motivation for the skilled person to modify the architecture shown in Fig. 8, as the Clos network illustrated in Fig. 8 of Guild performs a specific function, namely allowing sharing and utilization of transponders used for regeneration and/or wavelength conversion.

The present invention, as defined by the current independent claims, allows the provision of a cross-connect providing a wavelength-selective through path (e.g., any particular wavelength from one WDM input can be routed to an arbitrary WDM output), with fully flexible add/drop path (e.g., any wavelength from any WDM input can be routed to an arbitrary drop output, and the signal from any add input can be routed to any WDM output). Within optical cross-connects, it is desirable to minimize the number of optical components (including switches) in not only the through, but also in the add/drop paths, to prevent undesirable attenuation of the optical signal. The present invention provides an architecture that minimizes such optical components, and hence the insertion loss.

For example, this can be seen by comparing the number of switches that an add signal must pass through within the architecture shown in Fig. 8 of Guild, compared with the number of optical switches that must be traversed by an add signal in the architecture shown in Fig. 2 of the present application.

Within the architecture shown in Fig. 8 of Guild, an add signal would pass through each switch within each stage of the Clos network 401 (i.e., the three switches 406, 404 and 402),

and then through the two switches within the SIU410, prior to arriving at the output i.e., a total of five switches. In direct contrast, in Fig. 2 of the present application, an add signal (e.g., a1) would only have to pass through three switches (e.g., S2-1, S3-1 and S1-1) to reach the output, thus leading to performance advantages in the architecture of the present invention compared with that shown in Guild.

Similarly, it will be seen that a through channel (i.e., an optical signal arriving at input I1) need only pass through one single optical switch (e.g., S1-1) within the architecture of Fig. 2, to reach the output (e.g., O1). However, in the architecture shown in Fig. 8 of Guild a through signal arriving at the input would have to pass through several switches to reach the output.

Thus it will be appreciated that the present invention, as defined by the independent claims, is not only novel, but also inventive over the disclosure of Guild.

Wherefore, a favorable action is earnestly solicited.

Respectfully submitted,

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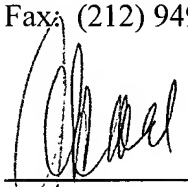

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